



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,383	10/30/2001	Volker Rasche	NL000577	5417
24737	7590	04/02/2004	EXAMINER	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS			THOMAS, COURTNEY D	
P.O. BOX 3001			ART UNIT	
BRIARCLIFF MANOR, NY 10510			PAPER NUMBER	
			2882	

DATE MAILED: 04/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/022,383	Applicant(s) RASCHE ET AL	
	Examiner Courtney Thomas	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-4 and 6 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. Claim 1 is objected to because of the following informalities:

3. Claim 1, line 8 recites the phrase: "the number of measuring points." Examiner notes that there is no antecedent basis for this term.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Examiner notes that claim 1 is directed to an X-ray imaging method, however, it is unclear how the reduction of the number of measuring points is achieved within the method (see claim 1, lines 8 and 9) and what "measuring points" is defined as or directed to. It is also unclear whether the imaging method requires the obtaining of successive cardiac cycles for 3-D reconstruction (contrast claim 1, lines 6-8 with claim 1 lines 8-9) and whether the objective of the imaging method is the reduction of measuring points. By virtue of their dependency, claims 2-4, and 6 are similarly treated.

Art Unit: 2882

6. Regarding claim 1, line 3, the phrase "for example" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klotz et al. (U.S. Patent 5,852,646) in view of Pflaum (U.S. Patent 6,324,254) and Fluhrer et al. (U.S. Patent 6,266,553).

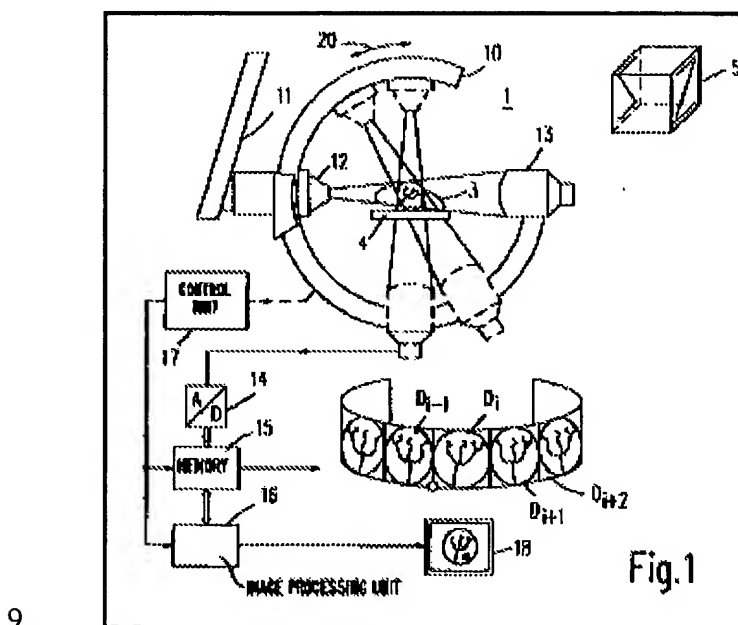


Figure 1 - U.S. Patent 5,852,646 to Klotz et al.

10. As per claims 1 and 6, Klotz et al. disclose a method (and apparatus) comprising: forming a set of 2-dimensional images (18) of an object (3) to be examined, by means of a scan rotation of an X-ray source (12) around said object over a run length (20).

11. Klotz et al. do not explicitly disclose a method wherein X-ray images are acquired at predetermined moments in a cardiac cycle of the object and reconstruction of a 3-dimensional volume thereof wherein the run length of the scan rotation over 180 degrees is approximately 10 degrees per second and wherein the number of measuring points in successive cardiac cycles for reconstructing a 3-dimensional volume is reduced.

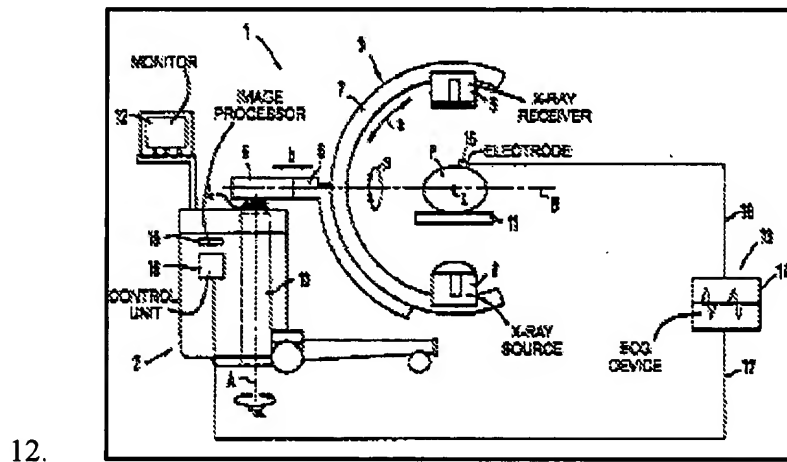
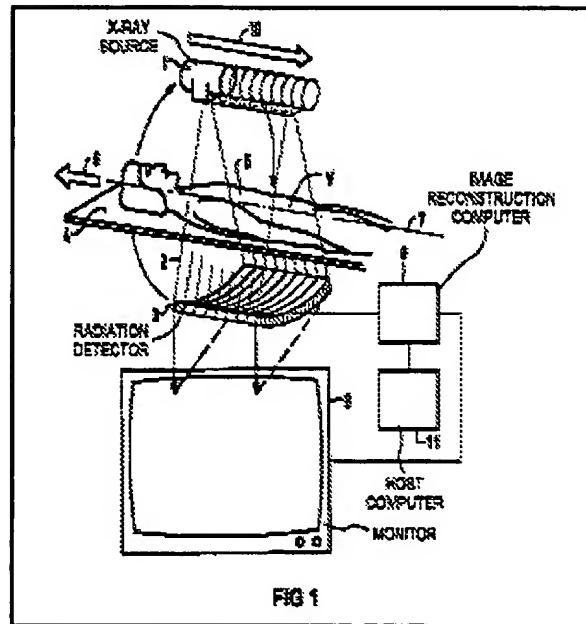


Figure 1 - U.S. Patent 6,324,254 to Pflaum

13. Pflaum discloses a method wherein X-ray images are acquired at predetermined moments in a cardiac cycle (abstract, column 2, lines 52-58) and wherein reconstruction of a 3-dimensional volume occurs as a result of the scan rotation occurring over 180 degrees (column 2, lines 31-32) and teaches that angular velocity can be configured for higher rates based on the heart rate of a patient to be imaged (column 1, lines 45-50).

Art Unit: 2882



14.

Figure 1 - U.S. Patent 6,266,553 to Fluhrer et al.

15. Fluhrer et al. teach a method wherein the selection of a particular portion of a cardiac cycle (i.e. the diastole) results in a reduction of the number of measuring points in successive cardiac cycles. Fluhrer et al. teach that such selection also results in imaging containing low motion artifacts, and results in reduced radiation exposure to a patient or object of interest (column 1, lines 64-67, column 2, lines 1-2, 5-9).

16. It would have been obvious to modify the method of Klotz et al. such that it incorporated the method of Pflaum and Fluhrer et al. One would have been motivated to make such a modification so that a sufficient number of images are obtained to illustrate stroboscopic changes in the imaged object as taught by Pflaum (column 2, lines 17-32). Additionally, a practitioner in the imaging art could also configure the system such that image capture is performed at particular times to reduce motion artifacts due to the movement of internal organs of a patient and to reduce the total radiation exposure during the imaging process as taught by Fluhrer et al. (column 1, lines 64-67, column 2, lines 1-2, 5-9) and Pflaum (column 1, lines 45-50).

Art Unit: 2882

17. **As per claims 2-4**, Klotz et al. as modified, do not explicitly disclose a method wherein a) before reconstruction, images obtained at predetermined corresponding characteristic time moments in successive cardiac cycles are correlated with each other b) wherein the characteristic time moments substantially correspond to R-peaks of the cardiac cycle c) before a reconstruction, images obtained at predetermined neighboring time moments in a predetermined characteristic time interval of a cardiac cycle are correlated with each other and d) reconstruction is combined with modeling techniques.

18. It would have been obvious to further modify the method of Klotz et al., such that it incorporated the aforementioned claims. One would have been motivated to make such a modification so that image capture is performed at particular times to reduce motion artifacts due to the movement of internal organs of a patient. Additionally, categorizing images with capture parameters allows for analysis of time dependent changes in the imaged object.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Courtney Thomas whose telephone number is (571) 272-2496. The examiner can normally be reached on M - F (9 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272 2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2882

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CT
Courtney Thomas



EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER